

PLAN LEGEND	
RIGHT OF WAY LINE	----
DITCH CENTERLINE	----
FENCE LINE	----
RETAINING WALL	----
GRAVEL LINE	----
GUARD RAIL LINE	----
RAILROAD TRACK LINE	+++++
ROAD CENTERLINE	----
TREE LINE	~~~~~
STREAM LINE	~~~~~
WETLAND LINE	----
EX SANITARY LINE	----
PR SANITARY LINE	----
AB SANITARY LINE	----
EX FORCEMAIN LINE	----
PR FORCEMAIN LINE	----
AB FORCEMAIN LINE	----
EX STORM LINE	----
PR STORM LINE	----
AB STORM LINE	----
EX WATER LINE	----
PR WATER LINE	----
AB WATER LINE	----
EX GAS LINE	----
PR GAS LINE	----
AB GAS LINE	----
EX STEAM LINE	----
PR STEAM LINE	----
AB STEAM LINE	----
UG CABLE TV LINE	----
AB CABLE TV LINE	----
UG ELECTRIC LINE	----
AB ELECTRIC LINE	----
UG FIBEROPTIC LINE	----
AB FIBEROPTIC LINE	----
UG TELEPHONE LINE	----
AB TELEPHONE LINE	----
OH ELECTRIC LINE	----
OH TELEPHONE LINE	----
OH CABLE TV LINE	----

SYMBOLS	
EX SANITARY MANHOLE	(SAN)
EX SANITARY CLEANOUT	(STRM)
EX STORM MANHOLE	(W)
EX STORM CATCHBASIN	(W)
EX. WATER MANHOLE	(W)
EX. WATER VALVE	(W)
EX. WATER HYDRANT	(W)
EX. WATER SHUTOFF	(W)
EX. WATER & GAS MH	(W&G)
EX. GAS MANHOLE	(GAS)
EX. GAS VALVE	(GV)
EX. GAS SHUTOFF	(GV)
EX. STEAM MANHOLE	(STEAM)
EX. TELEPHONE MANHOLE	(T)
EX. ELECTRIC MANHOLE	(E)
EX. POWERPOLE	(P)
EX. LIGHT POLE	(L)
EX. ELECTRIC VAULT	(V)
EX. ANCHOR	(A)
EX. ELECTRIC TRANSFORMER	(ET)
EX. STREET LIGHT	(SL)
EX. SIGNAL W/ STREET LIGHT	(SL)
EX. HANDHOLE	(H.H.)
EX. HANDHOLE	(H.H.)
EX. TELEPHONE PEDESTAL	(P)
EX. WELL	(W)
BENCHMARK	(B)
FOUND CI MONUMENT	(M)
EX. SIGN	(S)
CONTROL POINT	(C)
EX DECIDUOUS TREE	(D)
EX CONIFEROUS TREE	(C)
EX. PARKING METER	(P)
EX. SOIL BORING	(S)

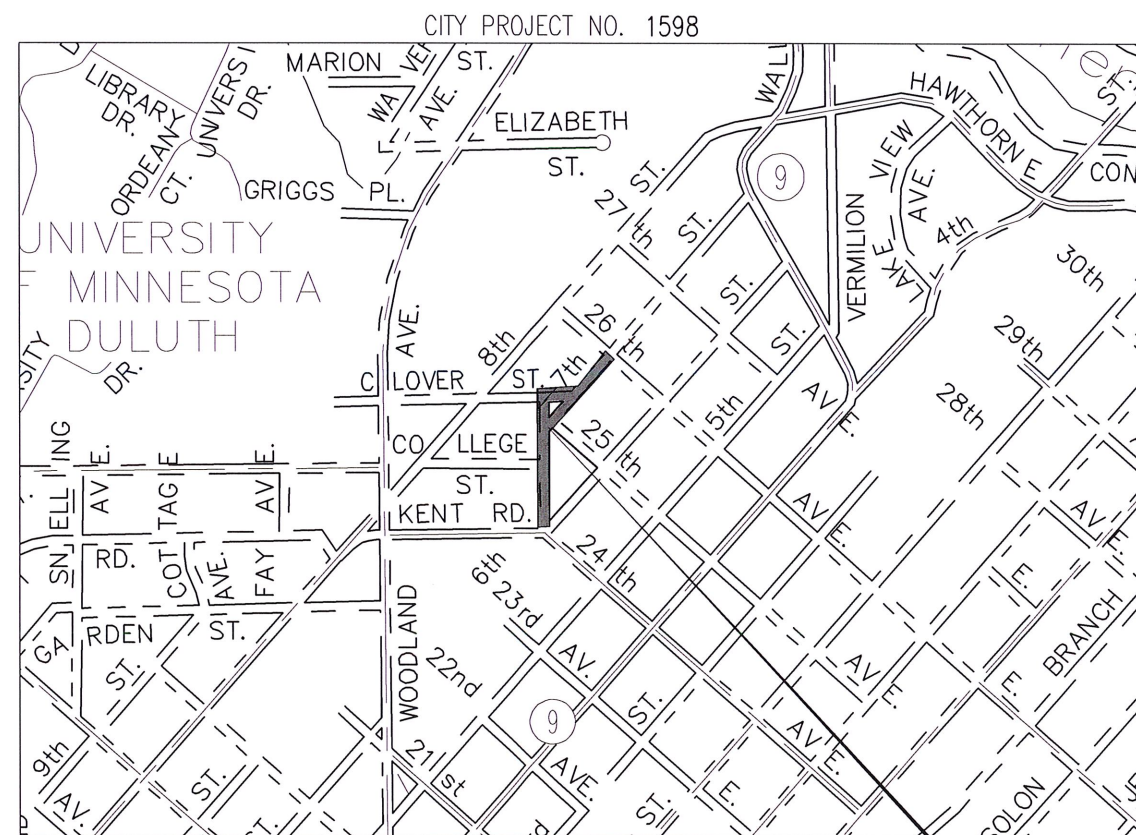
CITY OF DULUTH

DEPARTMENT OF PUBLIC WORKS AND UTILITIES

ENGINEERING DIVISION

CONSTRUCTION PLANS FOR:

CONCRETE PAVEMENT REHABILITATION ON IRVING PLACE, CLOVER STREET,
AND E. 7TH STREET BETWEEN 25TH AND 26TH AVENUE'S EAST



PROJECT LOCATION



THE SUBSURFACE UTILITY INFORMATION IN THIS PLAN IS UTILITY LEVEL D. THIS QUALITY LEVEL WAS DETERMINED ACCORDING TO THE GUIDELINES OF CI/ASCE 38-02, ENTITLED "STANDARD GUIDELINES FOR THE COLLECTION AND DEPICTION OF EXISTING SUBSURFACE UTILITY DATA".

WARNING:
LOCATION OF UNDERGROUND UTILITIES TO BE VERIFIED BY CONTRACTOR. CALL BEFORE DIGGING. GOPHER STATE ONE CALL 1-800-252-1166 REQUIRED BY LAW

GOVERNING SPECIFICATIONS

THE 2016 EDITION OF THE MINNESOTA DEPARTMENT OF TRANSPORTATION "STANDARD SPECIFICATIONS FOR CONSTRUCTION" SHALL GOVERN. AVAILABLE AT:
<http://www.dot.state.mn.us/pre-letting/spec/index.html>

THE 2017 EDITION OF THE CITY OF DULUTH PUBLIC WORKS AND UTILITIES DEPARTMENT CONSTRUCTION STANDARDS AND SUPPLEMENTS OR ADDENDUMS SHALL APPLY.
AVAILABLE AT:
<http://www.duluthmn.gov/engineering/standard-construction-specifications/>

THE SUBSURFACE UTILITY INFORMATION IN THIS PLAN IS UTILITY LEVEL D. THIS QUALITY LEVEL WAS DETERMINED ACCORDING TO THE GUIDELINES OF CI/ASCE 38-02, ENTITLED "STANDARD GUIDELINES FOR THE COLLECTION AND DEPICTION OF EXISTING SUBSURFACE UTILITY DATA".

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INDEX

SHEET NO.	DESCRIPTION
1	TITLE SHEET
2	STATEMENT OF ESTIMATED QUANTITIES
3	GENERAL LAYOUT
4-7	CPR DETAILS
8-14	CONSTRUCTION PLAN

THIS PLAN CONTAINS 14 SHEETS

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

DUNCAN SCHWENSOHN
PROJECT ENGINEER (TYPED OR PRINTED NAME)
Duncan Schwensohn 4/19/17 45486
PROJECT ENGINEER DATE LIC. NO.

CITY APPROVAL
C. Pedersen 4/19/17
APPROVED CHIEF ENGINEER OF TRANSPORTATION DATE
C. Pedersen 4/19/17
APPROVED CHIEF ENGINEER OF UTILITIES DATE
C. Pedersen 4/19/17
APPROVED CITY ENGINEER DATE

CITY OF DULUTH PROJECT NO. 1598

DRAWN BY: DJK

SHEET NO. 1 OF 14

I:\PW\ENGINEER\PROJECTS\1500-1999\1598 Irving Place Neighborhood Concrete Repairs\23-ACAD-DRAWINGS\1598_SEQ.dwg

STATEMENT OF ESTIMATED QUANTITIES						
						TOTAL
						PROJECT
			SPEC.			ESTIMATED
LINE	NOTE	SHEET	NO.	DESCRIPTION	UNIT	QUANTITY
1			2021.501	MOBILIZATION	LS	1
2	A		2104.501	REMOVE CURB AND GUTTER	LIN FT	12
3	B		2211.501	AGGREGATE BASE (CV) CLASS 5 (P)	TON	5
4	C		2302.603	JOINT REPAIR - (TYPE A2)	LIN FT	3900
5			2302.603	JOINT AND CRACK REPAIR (TYPE B3)	SQ FT	4000
6			2302.603	FULL DEPTH REPAIR MODIFIED (TYPE CA-LV)	LIN FT	628
7			2302.604	PAVEMENT REPLACEMENT (TYPE-CX)	SQ YD	119
8			2302.618	PARTIAL DEPTH REPAIR (TYPE BA)	SQ FT	150
9	D		2302.618	PARTIAL DEPTH REPAIR SPECIAL (TYPE BE)	SQ FT	1050
10	B		2302.618	SPOT FULL DEPTH REPAIR (TYPE C1-LV)	SQ FT	20
11	E		2302.603	CURB AND GUTTER REPAIR - (TYPE - SPECIAL)	LIN FT	12
12			2573.530	STORM DRAIN INLET PROTECTION	EACH	10
13			2506.522	ADJUST FRAME AND RING CASTING	EACH	1
14			2563.601	TRAFFIC CONTROL	LS	1

NOTES

- A. CURB AND GUTTER SECTION TO BE REMOVED AT NEAREST JOINTS AS MARKED BY THE ENGINEER. SAWCUTTING FOR REMOVAL IS INCIDENTAL.
- B. NOMINAL VALUE TO ESTABLISH BID PRICE ONLY. ACTUAL QUANTIITY MAY VARY.
- C. ALL EXISTING PAVEMENT JOINTS SHALL BE REHABILITATED WITH A TYPE - A2 JOINT REPAIR IF NOT FIELD MARKED OTHERWISE BY THE ENGINEER.
- D. NOMINAL VALUE TO ESTABLISH A BID PRICE ONLY. ASSUMED 25% OF TYPE-B3 AND TYPE - BA REPAIRS WILL REQUIRE TYPE - BE REPAIR.
- E. INSTALLING EPOXY COATED REBAR TO TIE THE NEW CURB AND GUTTER TO THE EXISTING CURB AND GUTTER IS INCIDENTAL TO THIS BID ITEM.

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

SIGNATURE: Duncan C. Schwensohn

DUNCAN SCHWENSOHN
TYPE NAME

DATE: 04/19/17

LIC. NO: 45486



CITY OF DULUTH
ENGINEERING DIVISION
411 W. 1ST ST. STE. 211
DULUTH, MN 55802

IRVING PLACE NEIGHBORHOOD CPR

CITY PROJECT NO.: 1598

STATE AID PROJECT NO.:

DRAWN BY: DJK

STATEMENT OF ESTIMATED QUANTITIES

SHEET NO. 2 OF 14

I:\PW\ENGINEER\PROJECTS\1500-1999\1598 Irving Place Neighborhood Concrete Repairs\23-ACAD-DRAWINGS\1598_glo.dwg



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SIGNATURE: Duncan C. Schwensohn

DUNCAN SCHWENSOHN
TYPE NAME

DATE: 04/19/17

LIC. NO: 45486



CITY OF DULUTH
ENGINEERING DIVISION
411 W. 1ST ST. STE. 211
DULUTH, MN 55802

IRVING PLACE NEIGHBORHOOD CPR

CITY PROJECT NO.: 1598

STATE AID PROJECT NO.:

DRAWN BY: DJK

GENERAL LAYOUT

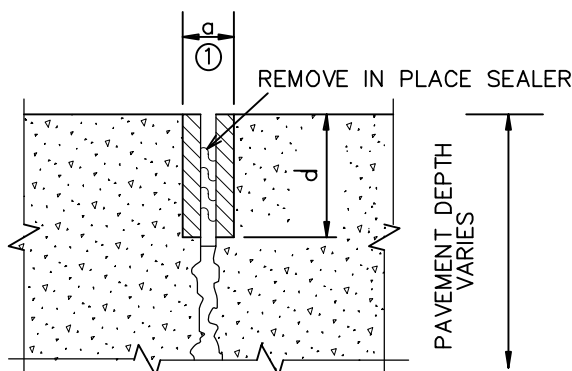
SHEET NO. 3 OF 14

I:\PW\ENGINEER\PROJECTS\1500-1999\1598_Irving_Place_Neighborhood_Concrete_Repairs\23-ACAD-DRAWINGS\1598_Dtls.dwg

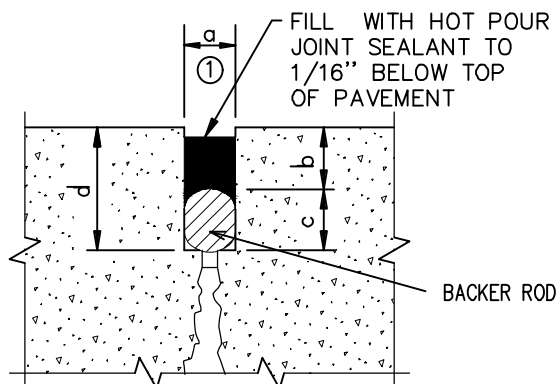
VARIABLE WIDTH JOINT CRACK REPAIR / JOINT REPAIR (TYPE A1)

DESCRIPTION: IN NEWLY CONSTRUCTED REPAIRS OR IN PLACE JOINTS OR CRACKS.
SAW, CLEAN, SEAL TRANSVERSE AND / OR LONGITUDINAL PAVEMENT JOINTS OR CRACKS.

SECTION REMOVAL



SECTION INSTALLATION



AREA TO BE REMOVED BY SAWING, IN PLACE JOINT OR CRACK MAY CONTAIN JOINT SEALER

JOINT WIDTH (INCHES)	SEALANT BEAD THICKNESS (INCHES)	BACKER ROD DIAMETER (INCHES)	MINIMUM JOINT DEPTH (INCHES)	ESTIMATED QUANTITY (ft/gal)	ESTIMATED QUANTITY (lb/lr)
a	b	c	d		
1/4	1/4	3/8	11/16	268	0.035
3/8	3/8	1/2	15/16	119	0.079
1/2	1/2	5/8	1-3/16	67	0.140
5/8	5/8	3/4	1-7/16	43	0.219
3/4	3/4	7/8	1-11/16	30	0.316
7/8	7/8	1.0	1-15/16	22	0.430
1.0	1.0	1-1/8	2-3/16	17	0.562
1-1/8	1-1/8	1-1/4	2-7/16	13	0.711
1-1/4	1-1/4	1-3/8	2-11/16	11	0.877

WORK TO BE DONE

1. REMOVE IN PLACE JOINT SEALANT, IF APPLICABLE.
2. SAW BOTH JOINT FACES TO CONFIGURATION SHOWN THEN IMMEDIATELY WATER FLUSH THE JOINT OR CRACK.
3. CLEAN AND DRY JOINT OR CRACK BY SANDBLASTING AND AIR BLASTING.
4. FURNISH AND INSTALL BACKER ROD OF APPROPRIATE DIAMETER IN JOINT OR CRACK OPENING. FURNISH AND INSTALL BACKER ROD WHEN JOINTS ARE 1/4" WIDE OR GREATER.
5. FILL JOINT OR CRACK WITH JOINT AND CRACK SEALER (SPECIFICATION 3725 HOT POURED).
6. TO PREVENT TRACKING OF THE JOINT AND CRACK SEALER USE TISSUE PAPER IF NECESSARY.

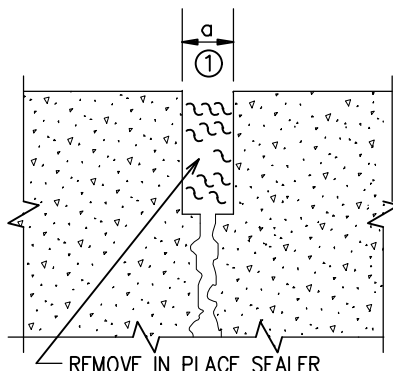
BASIS OF PAYMENT

INCIDENTAL

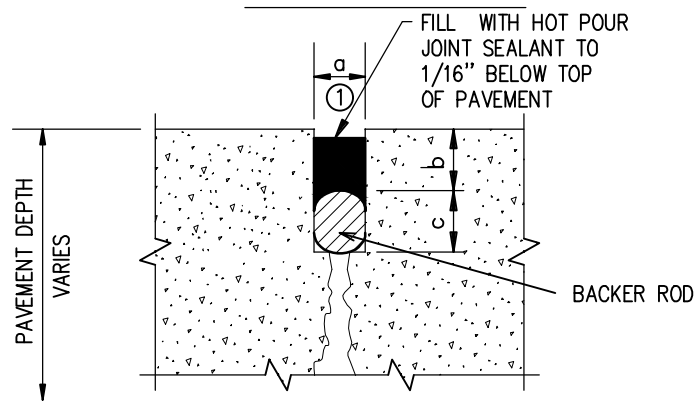
VARIABLE WIDTH IN PLACE JOINT OR CRACK REPAIR / JOINT REPAIR (TYPE A2)

DESCRIPTION: REMOVE IN PLACE JOINT SEALER, CLEAN AND SEAL TRANSVERSE AND / OR LONGITUDINAL PAVEMENT JOINTS OR CRACKS.

SECTION REMOVAL



SECTION INSTALLATION



JOINT WIDTH (INCHES)	SEALANT BEAD THICKNESS (INCHES)	BACKER ROD DIAMETER (INCHES)	MINIMUM JOINT DEPTH (INCHES)	ESTIMATED QUANTITY (ft/gal)	ESTIMATED QUANTITY (lb/lr)
a	b	c	d		
1/4	1/4	3/8	11/16	268	0.035
3/8	3/8	1/2	15/16	119	0.079
1/2	1/2	5/8	1-3/16	67	0.140
5/8	5/8	3/4	1-7/16	43	0.219
3/4	3/4	7/8	1-11/16	30	0.316
7/8	7/8	1.0	1 15/16	22	0.430
1.0	1.0	1 1/8	2 3/16	17	0.562
1 1/8	1 1/8	1 1/4	2 7/16	13	0.711
1 1/4	1 1/4	1 3/8	2 11/16	11	0.877

WORK TO BE DONE

1. REMOVE INPLACE JOINT SEALANT, IF APPLICABLE.
2. CLEAN AND DRY JOINT OR CRACK BY SANDBLASTING AND AIR BLASTING.
3. FURNISH AND INSTALL BACKER ROD OF APPROPRIATE DIAMETER IN JOINT OR CRACK OPENING. FURNISH AND INSTALL BACKER ROD WHEN JOINTS ARE 1/4" WIDE OR GREATER
4. FILL JOINT OR CRACK WITH JOINT AND CRACK SEALER (SPECIFICATION 3725 HOT POURED).
5. TO PREVENT TRACKING OF THE JOINT AND CRACK SEALER USE TISSUE PAPER IF NECESSARY.

BASIS OF PAYMENT

2302 JOINT REPAIR (TYPE A2)
(LIN. FT.)

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

SIGNATURE:

Duncan C. Schwensohn

DUNCAN SCHWENSOHN
TYPE NAME

DATE: 04/19/17

LIC. NO: 45486



CITY OF DULUTH
ENGINEERING DIVISION
411 W. 1ST ST. STE. 211
DULUTH, MN 55802

IRVING PLACE NEIGHBORHOOD CPR

CITY PROJECT NO.: 1598

STATE AID PROJECT NO.:

DRAWN BY: DJK

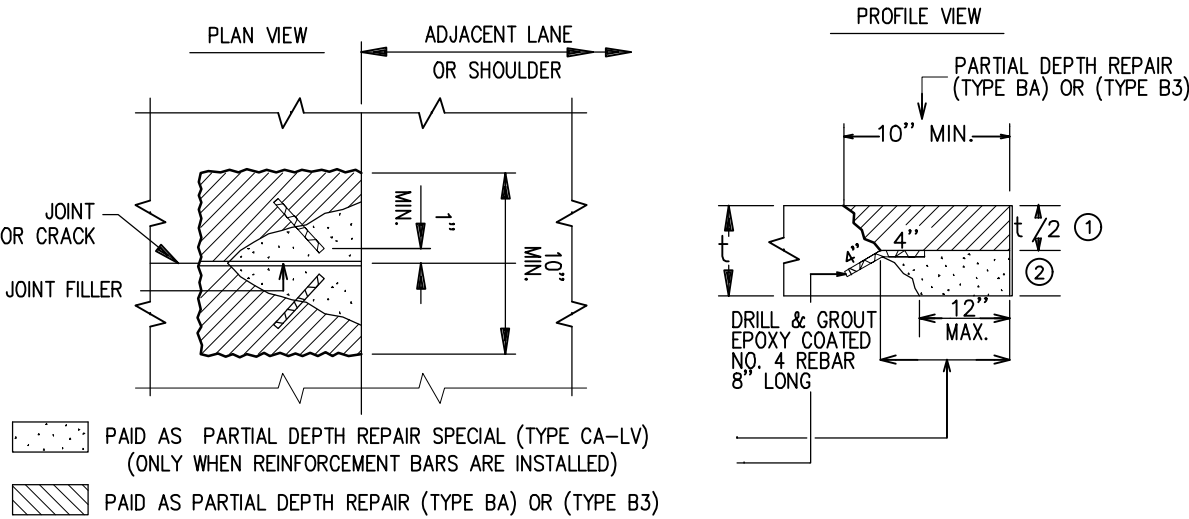
DETAILS

SHEET NO. 4 OF 14

I:\PW\ENGINEER\PROJECTS\1500-1999\1598 Irving Place Neighborhood Concrete Repairs\23-ACAD-DRAWINGS\1598 Dtl5.dwg

PARTIAL DEPTH REPAIR SPECIAL (TYPE BE)

DESCRIPTION: REMOVE CONCRETE, INSTALL REINFORCEMENT BARS, FURNISH & PLACE CONCRETE, SAW AND SEAL JOINTS.



NOTES

- * DO NOT USE THIS REPAIR IN WHEEL PATHS, USE FULL DEPTH REPAIR (TYPE CD)
- * JOINT AND CRACK REESTABLISHMENT IS REQUIRED. FURNISH AND INSTALL PREFORMED JOINT FILLER PRIOR TO CONCRETE PLACEMENT.
- * SAWING FOR THE INITIAL JOINT ESTABLISHMENT IS NOT ALLOWED.
- * FURNISH JOINT FILLER IN A SINGLE PIECE FOR THE FULL DEPTH OF THE REPAIR.
- * FURNISH PREFORMED JOINT FILLER OF A WIDTH EQUAL TO THE EXISTING TRANSVERSE JOINT OR CRACKS 1/4" MINIMUM THICKNESS. (STANDARD SPEC. 3702) WAX COATED CARDBOARD IS ALLOWED ON CRACKS THAT ARE 1/4" OR LESS IN WIDTH.
- * CHIPPING HAMMERS ARE LIMITED TO A MAXIMUM WEIGHT OF 35 POUNDS.

WORK TO BE DONE

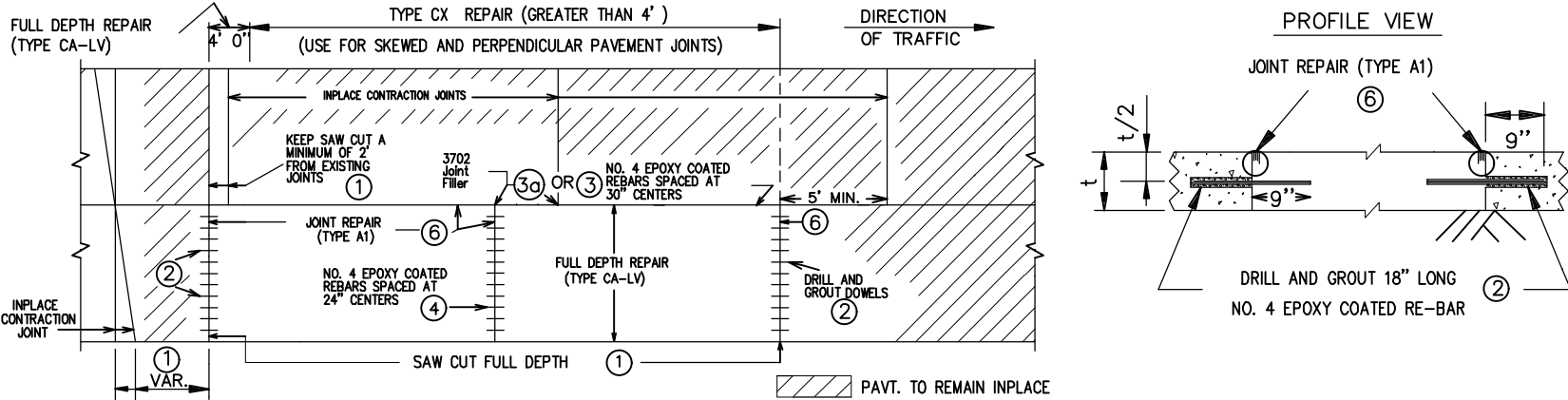
1. SEE PARTIAL DEPTH REPAIR (TYPE BA) OR CRACK AND JOINT REPAIR (TYPE B3) DETAILS FOR ADDITIONAL INFORMATION.
2. REMOVE ALL CONCRETE TO LIMITS SHOWN IN DETAIL, INCLUDING ALL UNSOUND CONCRETE BY MILLING AND CHIPPING HAMMERS. ①
3. REMOVE INPLACE REINFORCEMENT BARS AND DOWELS AS NEEDED.
4. CLEAN EXPOSED SURFACE BY SANDBLASTING AND AIR BLASTING.
5. DRILL & GROUT REINFORCEMENT BARS.
6. REESTABLISH THE CRACK THROUGH THE REPAIR BY FURNISHING AND INSTALLING WAX COATED CARDBOARD.
7. APPLY BOUNDING GROUT IMMEDIATELY PRIOR TO CONCRETE PLACEMENT. RE-SANDBLAST AND AIR BLAST IF THE BONDING GROUT DRIES BEFORE THE CONCRETE IS PLACED.
- 7a. THE CONTRACTOR MAY USE WATER TO PRECONDITION THE INPLACE CONCRETE PRIOR TO PLACING CONCRETE BACKFILL. REAPPLY WATER IF CONCRETE DRIES PRIOR TO PLACING CONCRETE BACKFILL.
8. FURNISH, PLACE, AND VIBRATE CONCRETE MIX NO. 3U18.

BASIS OF PAYMENT

- 2302 PARTIAL DEPTH REPAIR (TYPE BA)(SQ. FT.) OR
2302 CRACK AND JOINT REPAIR (TYPE B3) (LIN. FT.)
- 2302 PARTIAL DEPTH REPAIR SPECIAL (TYPE BE) (SQ. FT.)
(1 SQ. FT. MINIMUM)

PAVEMENT REPLACEMENT (TYPE CX)

DESCRIPTION: REMOVE CONCRETE, RESTORE AND COMPACT BASE, PLACE DOWELS AND REINFORCEMENT BARS, FURNISH AND PLACE CONCRETE, SAW AND SEAL JOINTS.



NOTES

- * PLACE SAW CUT AT LEAST 2' UP STREAM OR 5' DOWN STREAM FROM ANY TRANSVERSE JOINTS IN THE ADJACENT LANE.
- * DRILL CONCRETE PAVEMENT UTILIZING A DRILL BIT DIAMETER AN > 1/8-INCH LARGER THAN RE-BAR BAR DIAMETER. ②

WORK TO BE DONE

1. SEE FULL DEPTH REPAIR (TYPE CA-LV) FOR ADDITIONAL INFORMATION.
2. SAW FULL DEPTH & REMOVE IN PLACE CONCRETE PAVEMENT. RESTORE AND COMPACT IN PLACE BASE. ①
3. DRILL IN PLACE CONCRETE FOR STEEL REINFORCEMENT AT 24" ON CENTER. ②
4. FURNISH AND INSTALL NO. 4 EPOXY COATED RE-BAR. SECURE RE-BAR TO THE IN PLACE CONCRETE WITH AN APPROVED NON SHRINK GROUT OR EPOXY ADHESIVE. ②
5. IF MATCHING IN PLACE TRANSVERSE JOINTS, DRILL AND GROUT EPOXY COATED TIE BARS INTO THE ADJACENT LANE. ③ OR
- 5a. ISOLATE ALL TRANSVERSE PAVEMENT JOINTS AND CRACKS. FURNISH AND INSTALL JOINT FILLER 3702 BETWEEN THE ADJACENT IN PLACE LANE AND THE (TYPE CX) REPAIR. ③a (INCIDENTAL)
6. CLEAN VERTICAL SURFACES OF IN PLACE CONCRETE.
7. PLACE EPOXY COATED SUPPLEMENTAL REINFORCING BARS OVER CULVERTS AS NEEDED, SEE STANDARD PLATE 1070.
8. FURNISH AND PLACE CONCRETE MIX NUMBER 3R52.
9. VIBRATE, FINISH TO GRADE AND SLOPE, EDGE, TEXTURE, AND APPLY CURE.
10. GREEN SAW JOINTS OVER RE-BAR. ④
11. SAW AND SEAL JOINTS IN ACCORDANCE WITH JOINT REPAIR (TYPE A1) DETAIL. (INCIDENTAL) ⑥

BASIS OF PAYMENT

- 2302 FULL DEPTH REPAIR (TYPE CA-LV MODIFIED), (LIN.FT.)
- 2302 PAVEMENT REPLACEMENT (TYPE CX) (SQ. YD.)

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

SIGNATURE: *Duncan C. Schwensohn*

DUNCAN SCHWENSOHN
TYPE NAME

DATE: 04/19/17

LIC. NO: 45486



CITY OF DULUTH
ENGINEERING DIVISION
411 W. 1ST ST. STE. 211
DULUTH, MN 55802

IRVING PLACE NEIGHBORHOOD CPR

CITY PROJECT NO.: 1598

STATE AID PROJECT NO.:

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DETAILS

SHEET NO. 5 OF 14

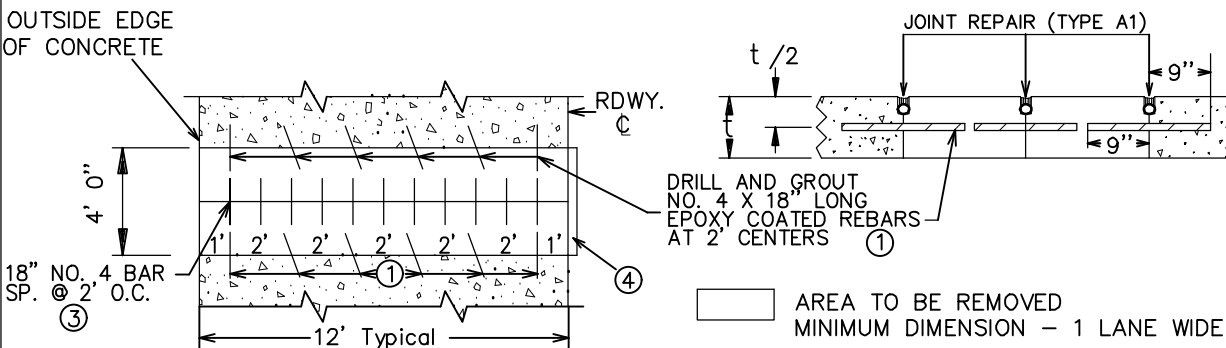
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FULL DEPTH REPAIR (TYPE CA-LV MOD.)

DESCRIPTION: SAW CONCRETE, REMOVE CONCRETE. PLACE REINFORCING BAR, FURNISH AND PLACE CONCRETE, SAW AND SEAL JOINTS.

PLAN VIEW

PROFILE VIEW



Notes

- * THE NO. 4 REINFORCEMENT BARS MAYBE SKEWED AT 20° OR STRAIGHT AT THE DISCRETION OF THE CONTRACTOR.①
- * DRILL IN PLACE PAVEMENT UTILIZING DRILL BIT(S) WITH A STATED OR MEASURED DIAMETER OF OF AT LEAST ONE EIGHTH INCH LARGER IN DIAMETER THAN RE-BAR DIAMETERS.①
- * FOR SKEWED REPAIRS, ELIMINATE A TIE BAR AT CENTERLINE EDGE WITH ACUTE ANGLE.
- * ALL REINFORCING STEEL SHALL BE NO.4 EPOXY COATED REINFORCEMENT BAR.

WORK TO BE DONE

BASIS OF PAYMENT

1. SAW CUT TO FULL DEPTH AND REMOVE CONCRETE PAVEMENT. RESTORE AND COMPACT IN PLACE BASE.
2. DRILL IN PLACE CONCRETE AT 2' CENTERS FOR NO. 4 EPOXY COATED REINFORCEMENT BARS.①(INCIDENTAL)
3. FURNISH AND INSTALL EPOXY COATED REINFORCEMENT BARS SECURE THE REINFORCEMENT BARS TO THE IN PLACE CONCRETE BY USING AN APPROVED NON SHRINK GROUT OR EPOXY ADHESIVE.①(INCIDENTAL)
4. FURNISH AND INSTALL 18" NO.4 EPOXY COATED REINFORCING BARS BARS MUST BE HELD INPLACE WITH REBAR PINS.③ (INCIDENTAL)
5. FURNISH AND INSTALL JOINT FILLER.④
6. FURNISH AND PLACE CONCRETE MIX NUMBER 3R52. VIBRATE, FINISH TO GRADE, SLOPE, EDGE, TEXTURE, AND APPLY CURE.
7. SAW AND SEAL JOINTS IN ACCORDANCE WITH JOINT REPAIR (TYPE A1) DETAIL. (INCIDENTAL)

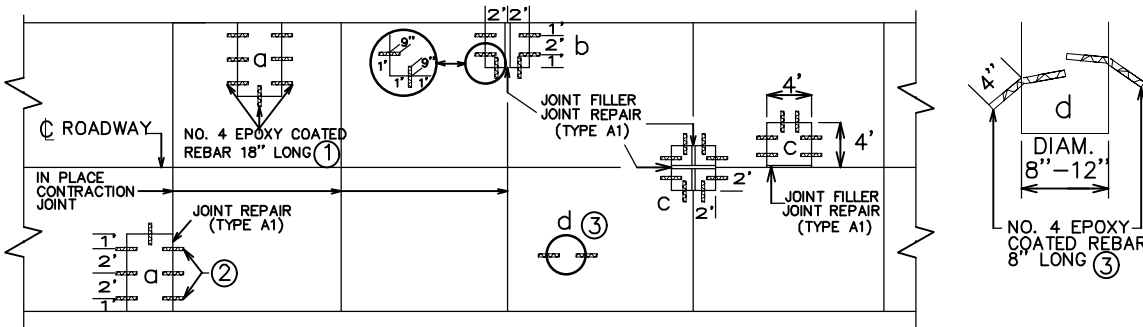
2302 FULL DEPTH REPAIR (TYPE CA-LV MODIFIED), (LIN. FT.)

SPOT FULL DEPTH REPAIR TYPE (C1-LV)

DESCRIPTION: SAW CONCRETE, REMOVE CONCRETE. PLACE REINFORCING AND DOWELS AS REQUIRED. FURNISH AND PLACE CONCRETE, SAW AND SEAL JOINTS.

PLAN VIEW

SECTION



REPAIR DIMENSIONS

- A) EXTERIOR EDGE, 3' 6" X 6' MIN. FOR A ONE HALF LANE REPAIR.
- B) EXTERIOR EDGE AT A JOINT LOCATION, 4' X 4' MIN. SIZE.
- C) INTERIOR EDGE AT CENTERLINE, 4' X 4' MIN. SIZE.
- D) GAS LINE OR EXPLORATORY CORE HOLE 4" DIAMETER MINIMUM SIZE AND 12" DIAMETER MAXIMUM SIZE.

NOTES

- * DRILL IN PLACE PAVEMENT UTILIZING DRILL BIT(S) WITH A STATED OR MEASURED DIAMETER OF OF AT LEAST ONE EIGHTH INCH LARGER IN DIAMETER THAN RE-BAR DIAMETERS. ①②③

WORK TO BE DONE

BASIS OF PAYMENT

1. SAW CUT TO FULL DEPTH AND REMOVE CONCRETE PAVEMENT. RESTORE AND COMPACT IN PLACE BASE.
2. DRILL IN PLACE CONCRETE AT 2' C. TO C.: FOR NO. 4 EPOXY COATED REINFORCEMENT BARS. ①②③
3. FURNISH AND INSTALL EPOXY COATED REINFORCEMENT BARS. SECURE THE REINFORCEMENT BARS TO THE IN PLACE CONCRETE BY USING AN APPROVED NON SHRINK GROUT OR EPOXY ADHESIVE.
4. CLEAN THE VERTICAL SURFACES OF THE IN PLACE CONCRETE.
5. FURNISH AND INSTALL JOINT FILLER.
6. FURNISH AND PLACE CONCRETE MIX NUMBER 3R52 OR FURNISH AND PLACE 3U18 FOR CORE HOLE "D" REPAIRS.
7. VIBRATE, FINISH TO GRADE AND SLOPE, EDGE, TEXTURE, AND APPLY CURE.
8. SAW AND SEAL JOINTS IN ACCORDANCE WITH JOINT REPAIR (TYPE A1) DETAIL.(INCIDENTAL)

2302 SPOT FULL DEPTH REPAIR (TYPE C1-LV) (SQ. FT.)

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

SIGNATURE:

Duncan C. Schwensohn

DUNCAN SCHWENSOHN
TYPE NAME

DATE: 04/19/17

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DULUTH, MN 55802

IRVING PLACE NEIGHBORHOOD CPR

CITY PROJECT NO.: 1598

STATE AID PROJECT NO.:

DRAWN BY: DJK

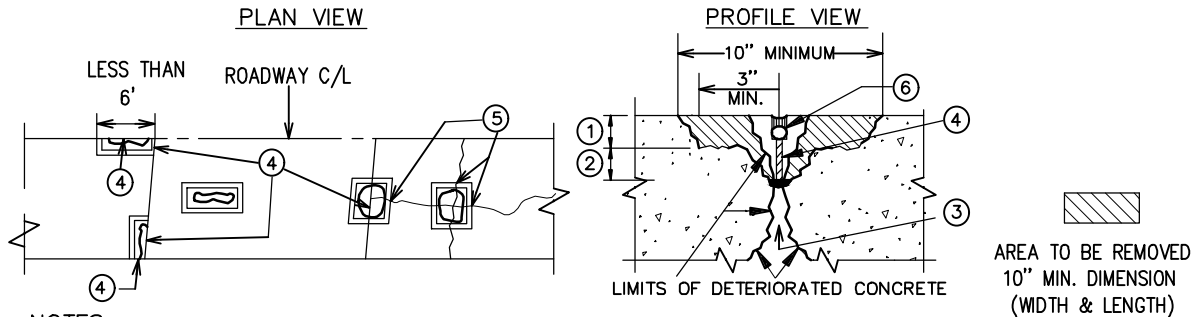
DETAILS

SHEET NO. 6 OF 14

I:\PW\ENGINEER\PROJECTS\1500-1999-1598_Irving_Place_Neighborhood_Concrete_Repairs\23-ACAD-DRAWINGS\1598_Dtls.dwg

PARTIAL DEPTH REPAIR (TYPE BA)

DESCRIPTION: REMOVE CONCRETE, REESTABLISH JOINTS AND CRACKS, FURNISH AND PLACE CONCRETE, SAW AND SEAL JOINTS AND CRACKS.



NOTES

- * JOINT AND CRACK REESTABLISHMENT IS REQUIRED. FURNISH AND INSTALL PREFORMED JOINT FILLER PRIOR TO CONCRETE PLACEMENT.
- * SAWING FOR THE INITIAL JOINT ESTABLISHMENT IS NOT ALLOWED.
- * FURNISH PREFORMED JOINT FILLER OF A WIDTH EQUAL TO THE EXISTING TRANSVERSE JOINT OR CRACK 1/4" MINIMUM THICKNESS (STANDARD SPEC. 3702). (4) WAX COATED CARDBOARD IS ALLOWED ON CRACKS THAT ARE 1/4" OR LESS IN WIDTH. (5)
- * CHIPPING HAMMERS ARE LIMITED TO A MAXIMUM WEIGHT OF 35 POUNDS.

BASIS OF PAYMENT

WORK TO BE DONE

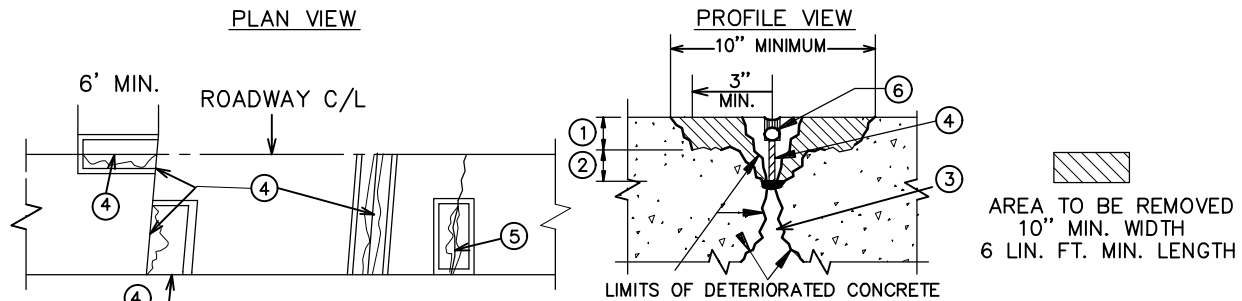
1. REMOVE ALL CONCRETE TO LIMITS SHOWN IN DETAIL, INCLUDING ALL UNSOUND CONCRETE BY MILLING (1) AND CHIPPING HAMMERS. (2) TAPER ALL SIDES OF THE REPAIR 30' - 60' FROM VERTICAL AND TO A MINIMUM DEPTH OF 2". (1)
2. CLEAN EXPOSED SURFACE BY SANDBLASTING AND AIR BLASTING.
3. REESTABLISH THE CRACK THROUGH THE REPAIR BY FURNISHING AND INSTALLING WAX COATED CARDBOARD. (5)
4. APPLY BONDING GROUT IMMEDIATELY PRIOR TO CONCRETE PLACEMENT. RE-SANDBLAST AND AIR BLAST IF THE BONDING GROUT DRIES BEFORE THE CONCRETE IS PLACED AND/OR THE CONTRACTOR MAY USE WATER TO PRECONDITION THE INPLACE CONCRETE PRIOR TO PLACING CONCRETE. BACKFILL, REAPPLY WATER IF CONCRETE DRIES PRIOR TO PLACING CONCRETE BACKFILL.
5. FURNISH & PLACE CONCRETE MIX NUMBER 3U18. VIBRATE, FINISH TO GRADE AND SLOPE, EDGE ADJACENT TO JOINT FILLER, SEAL EDGES WITH GROUT AND APPLY CURE.
6. SAW AND SEAL JOINTS AND CRACKS IN ACCORDANCE WITH JOINT REPAIR (TYPE A1) DETAIL. (6) (INCIDENTAL)

2302

PARTIAL DEPTH REPAIR
(TYPE BA) (SQ. FT.)

JOINT AND CRACK REPAIR (TYPE B3)

DESCRIPTION: REMOVE CONCRETE, REESTABLISH JOINTS AND CRACKS, FURNISH AND PLACE CONCRETE, SAW AND SEAL JOINTS AND CRACKS.



NOTES

- * JOINT AND CRACK REESTABLISHMENT IS REQUIRED. FURNISH AND INSTALL PREFORMED JOINT FILLER PRIOR TO CONCRETE PLACEMENT.
- * SAWING FOR THE INITIAL JOINT ESTABLISHMENT IS NOT ALLOWED WHEN PLACED OVER RANDOM CRACKS.
- * FURNISH PREFORMED JOINT FILLER OF A WIDTH EQUAL TO THE EXISTING TRANSVERSE JOINT OR CRACK 1/4" MINIMUM THICKNESS (STANDARD SPEC. 3702). (4) WAX COATED CARDBOARD IS ALLOWED ON CRACKS THAT ARE 1/4" OR LESS IN WIDTH. (5)
- * CHIPPING HAMMERS ARE LIMITED TO A MAXIMUM WEIGHT OF 35 POUNDS.

BASIS OF PAYMENT

WORK TO BE DONE

1. REMOVE ALL CONCRETE TO LIMITS SHOWN IN DETAIL, INCLUDING ALL UNSOUND CONCRETE BY MILLING (1) AND CHIPPING HAMMERS. (2) TAPER ALL SIDES OF THE REPAIR 30' - 60' FROM VERTICAL AND TO A MINIMUM DEPTH OF 2". (1)
2. CLEAN EXPOSED SURFACE BY SANDBLASTING AND AIR BLASTING.
3. REESTABLISH THE CRACK THROUGH THE REPAIR BY FURNISHING AND INSTALLING WAX COATED CARDBOARD. (5)
4. APPLY BONDING GROUT IMMEDIATELY PRIOR TO CONCRETE PLACEMENT. RE-SANDBLAST AND AIR BLAST IF THE BONDING GROUT DRIES BEFORE THE CONCRETE IS PLACED. AND/OR
5. THE CONTRACTOR MAY USE WATER TO PRECONDITION THE INPLACE CONCRETE PRIOR TO PLACING CONCRETE. BACKFILL, REAPPLY WATER IF CONCRETE DRIES PRIOR TO PLACING CONCRETE BACKFILL.
6. FURNISH & PLACE CONCRETE MIX NUMBER 3U18. VIBRATE, FINISH TO GRADE AND SLOPE, EDGE ADJACENT TO JOINT FILLER, SEAL EDGES WITH GROUT AND APPLY CURE.
7. SAW AND SEAL JOINTS AND CRACKS IN ACCORDANCE WITH JOINT REPAIR (TYPE A1) DETAIL. (6) (INCIDENTAL)

2302 JOINT AND CRACK REPAIR
(TYPE B3) (SQ. FT.)

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

SIGNATURE:

Duncan C. Schwensohn

DUNCAN SCHWENSOHN
TYPE NAME

DATE: 04/19/17

LIC. NO: 45486



CITY OF DULUTH
ENGINEERING DIVISION
411 W. 1ST ST. STE. 211
DULUTH, MN 55802

IRVING PLACE NEIGHBORHOOD CPR

CITY PROJECT NO.: 1598

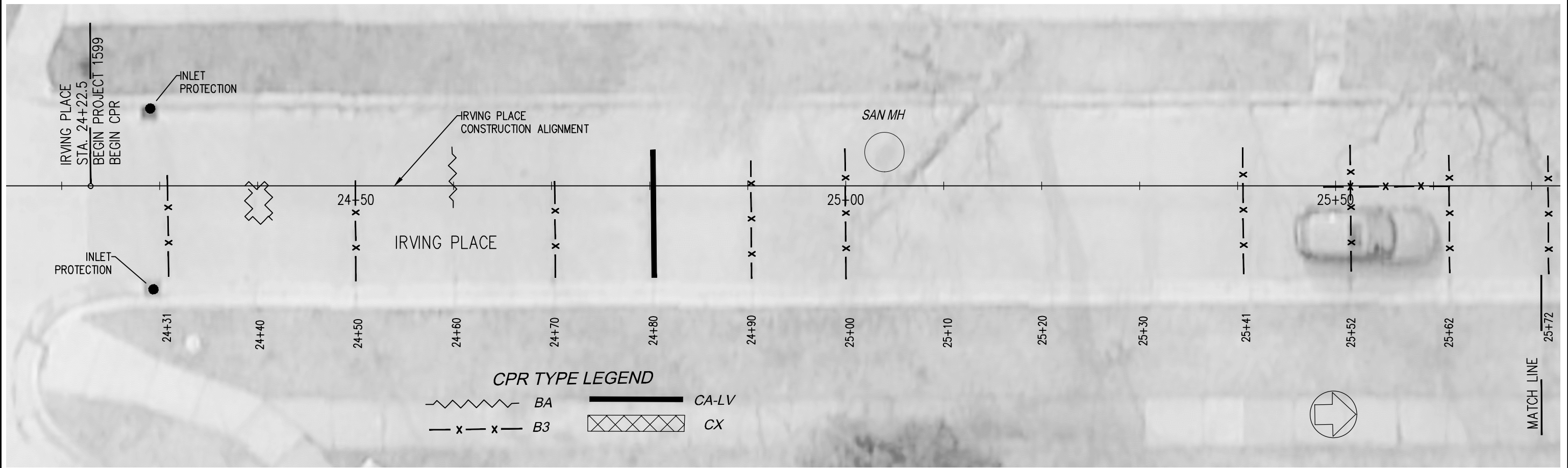
STATE AID PROJECT NO.:

DRAWN BY: DJK

DETAILS

SHEET NO. 7 OF 14

I:\PW\ENGINEER\PROJECTS\1500-1999\1598 Irving Place Neighborhood Concrete Repairs\23-ACAD-DRAWINGS\1598_Prop.dwg



CONSTRUCTION NOTES

1. WITHIN THE PLAN WHENEVER THE WORD "INCIDENTAL" IS USED IT SHALL MEAN NO DIRECT PAYMENT WILL BE MADE FOR THAT ITEM.
2. WHENEVER THE WORD "MIN" IS USED IN THIS PLAN, IT SHALL MEAN MINIMUM.
3. THE CONTRACTOR SHALL NOT STORE MATERIAL OUTSIDE THE PLANNED CONSTRUCTION LIMITS UNLESS APPROVED BY THE ENGINEER.
4. ALL STORM INLETS POTENTIALLY IMPACTED BY CONSTRUCTION ACTIVITY SHALL BE PROTECTED FROM DISCHARGE OF CONCRETE SLURRY AND DEBRIS AT ALL TIMES.
5. THE CONTRACTOR SHALL IMPLEMENT A DUST CONTROL PROGRAM CONSISTENT WITH THE RULES AND REGULATIONS OF THE MINNESOTA DEPARTMENT OF TRANSPORTATION, MINNESOTA POLLUTION CONTROL AGENCY AND THE MINNESOTA DEPARTMENT OF TRANSPORTATION.
6. ON SITE STORING OF CONCRETE OR CEMENTITIOUS WASTE MATERIAL IS NOT ALLOWED.
7. A CONCRETE WASHOUT BAY IS REQUIRED. THE CONTRACTOR WILL NOT BE ALLOWED TO WASH OUT TRUCKS IF WASH WATER DRAINS INTO CATCH BASINS OR ONTO GRASS AREAS. WASHOUT BAY SHALL BE INCIDENTAL TO THE CONTRACT.
8. CONTRACTOR WILL ONLY BE ALLOWED TO RESTRICT DRIVEWAY ACCESS TO ANY RESIDENT ONCE FOR A PERIOD NOT TO EXCEED 5 WORKING DAYS. ROAD MAY BE OPENED TO TRAFFIC AFTER 12 HOURS IF A FIELD CURED CYLINDER COMPRESSIVE TEST INDICATES A MINIMUM COMPRESSIVE STRENGTH OF 3000 PSI OR 500 PSI FLEXURAL STRENGTH HAS BEEN ACHIEVED.



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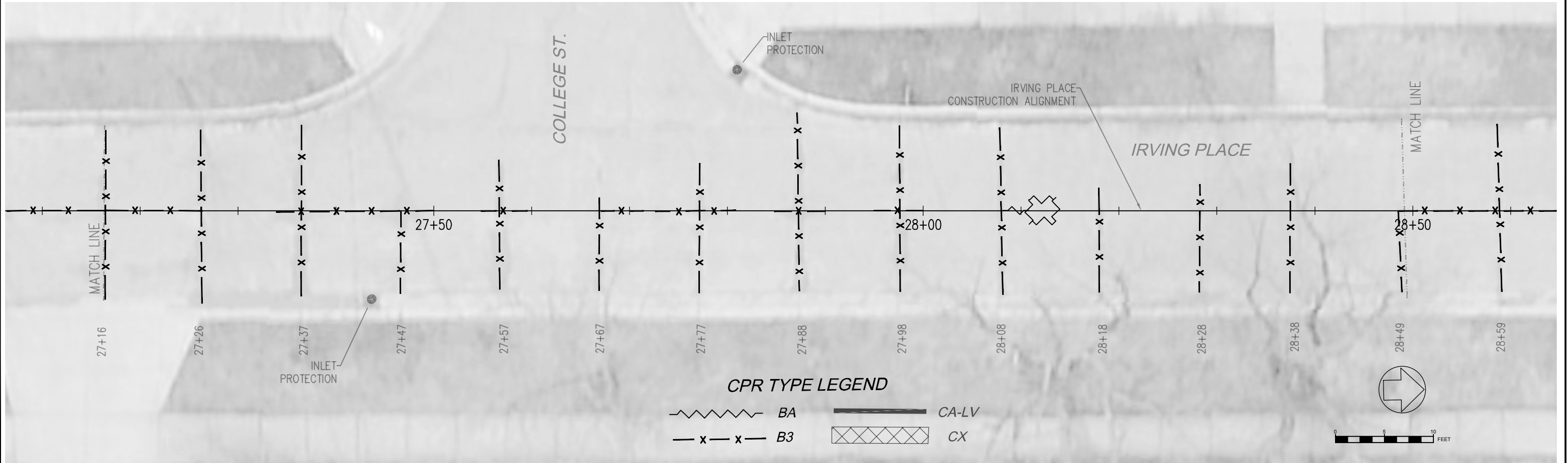
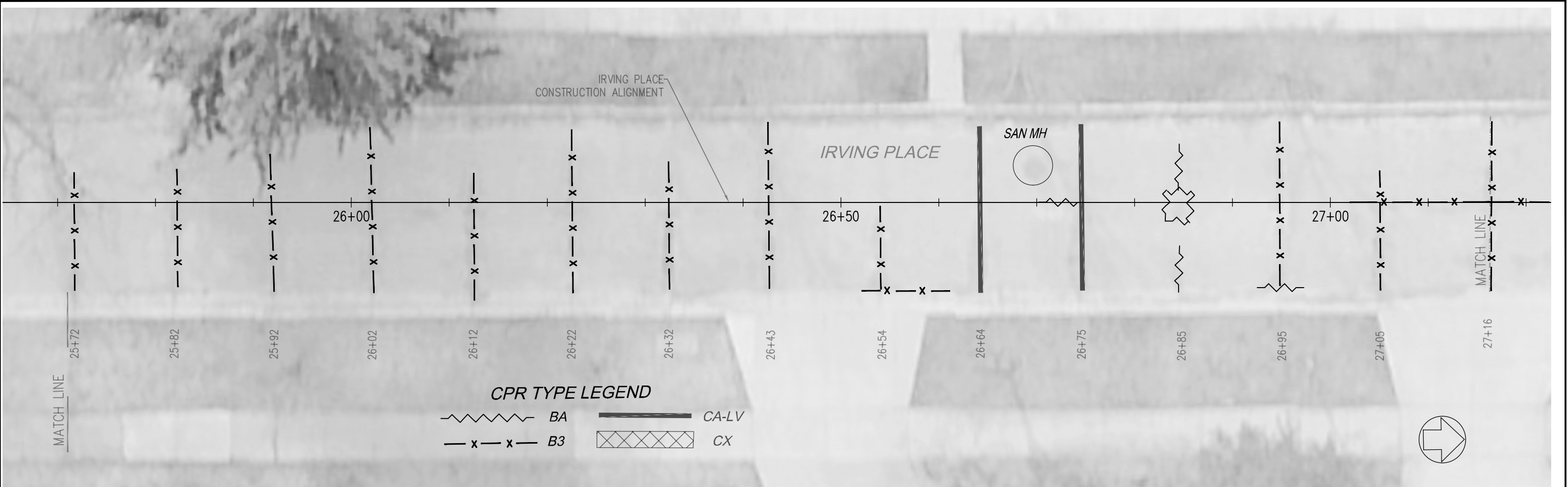
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CPR PLAN

SHEET NO. 8 OF 14

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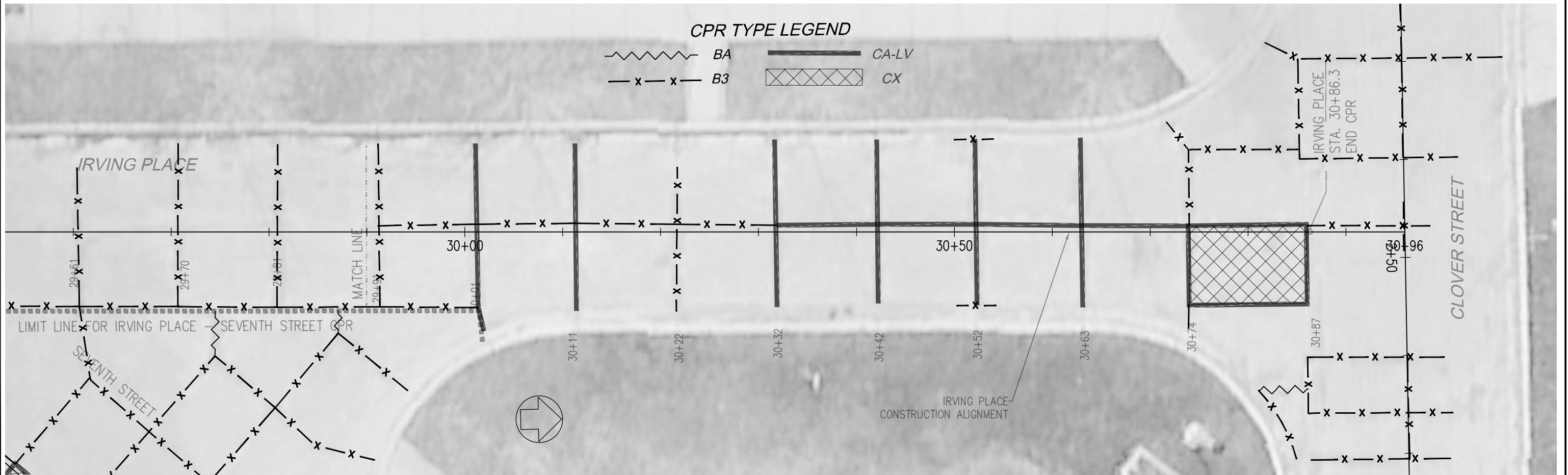
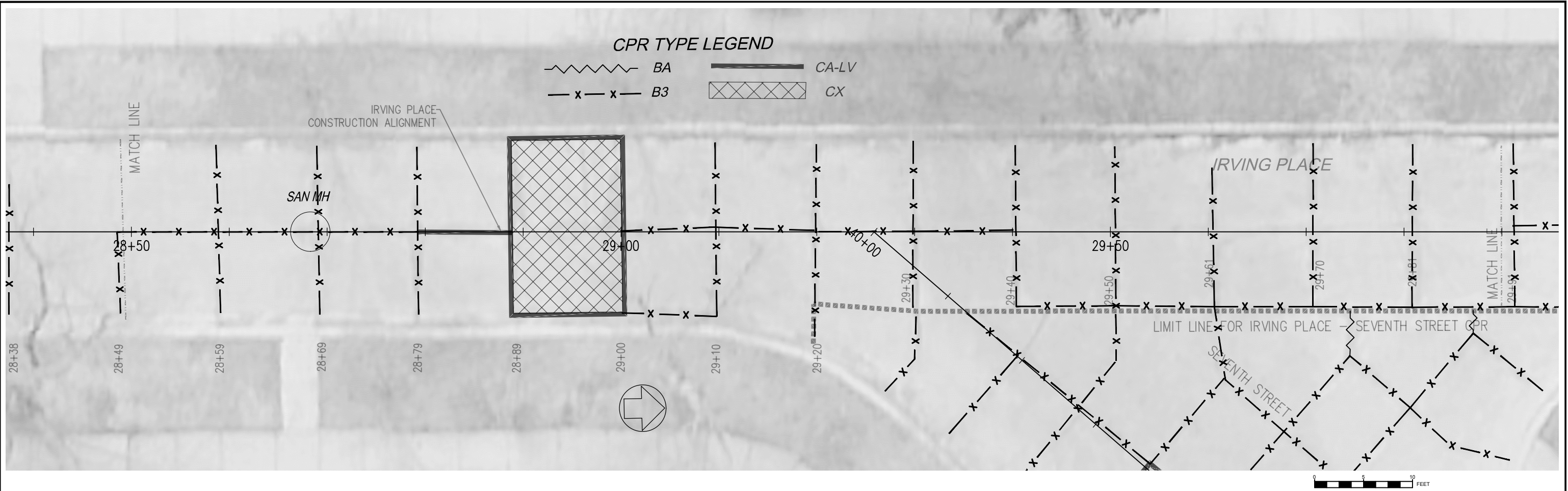
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CPR PLAN

SHEET NO. 9 OF 14

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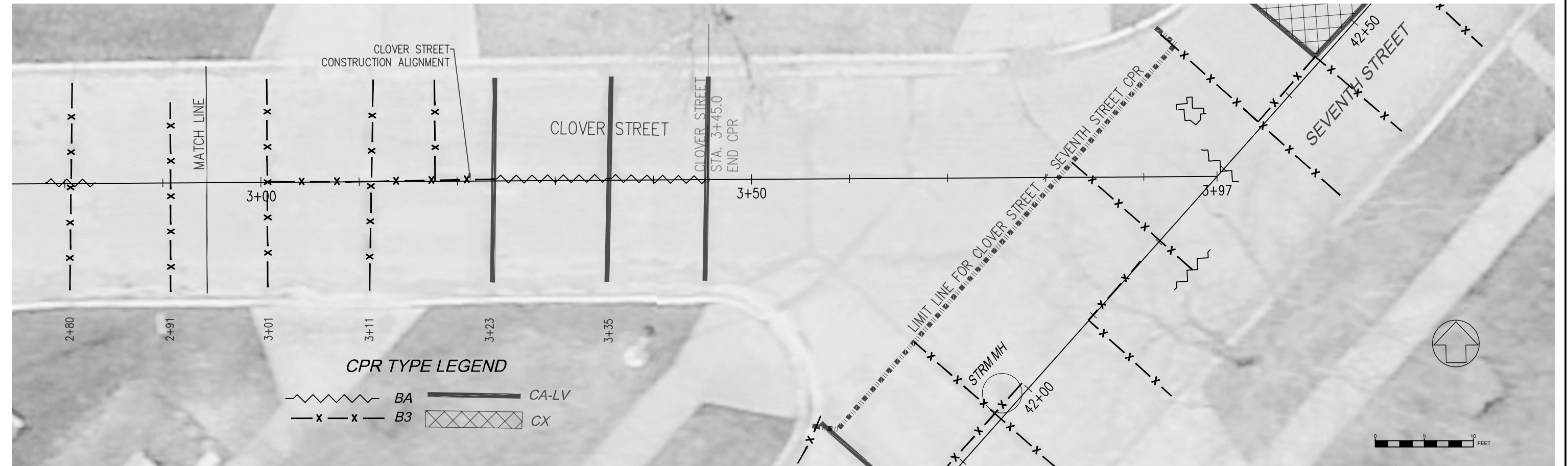
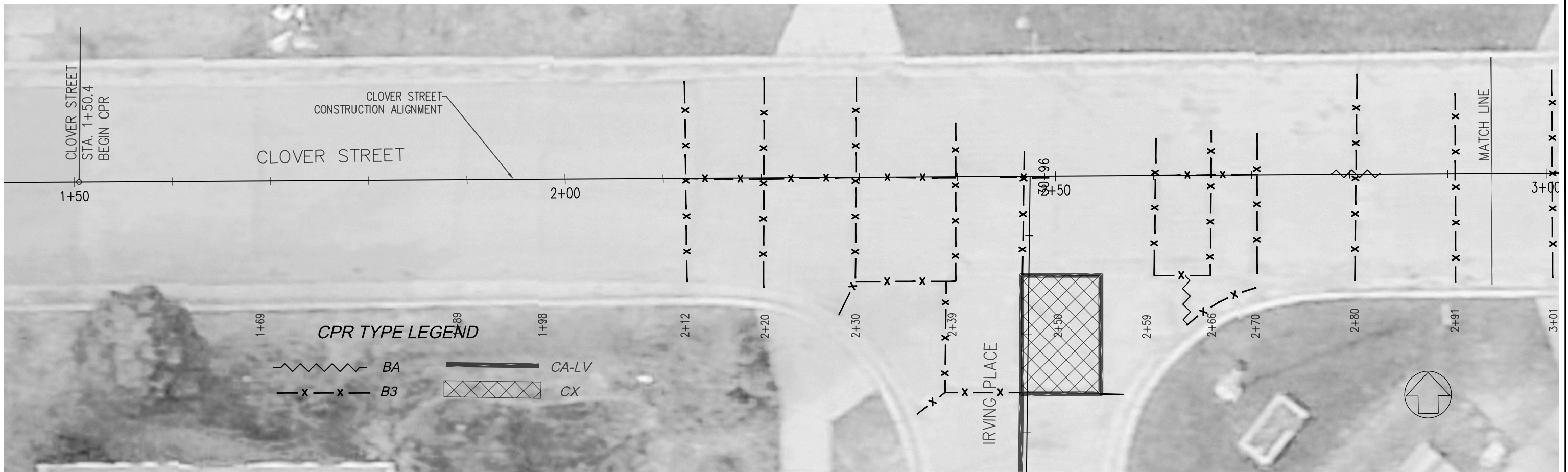
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CPR PLAN

SHEET NO. 10 OF 14

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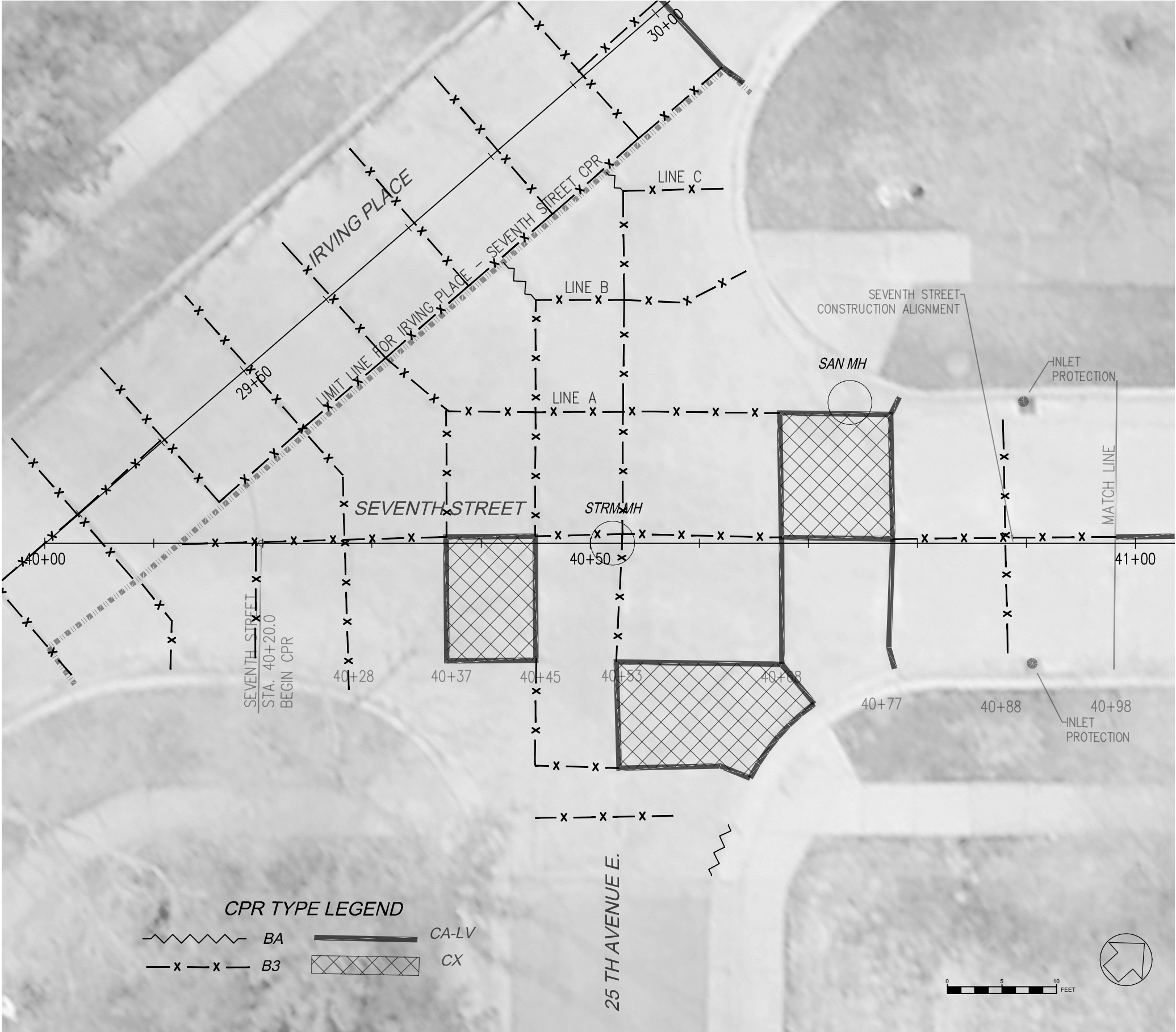
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CPR PLAN

SHEET NO. 11 OF 14

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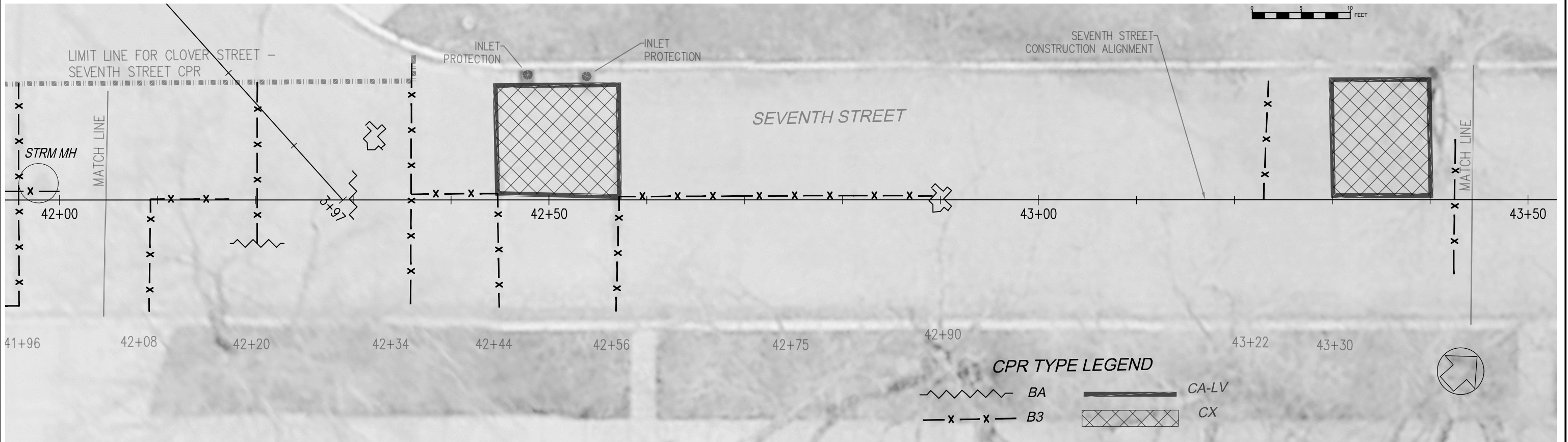
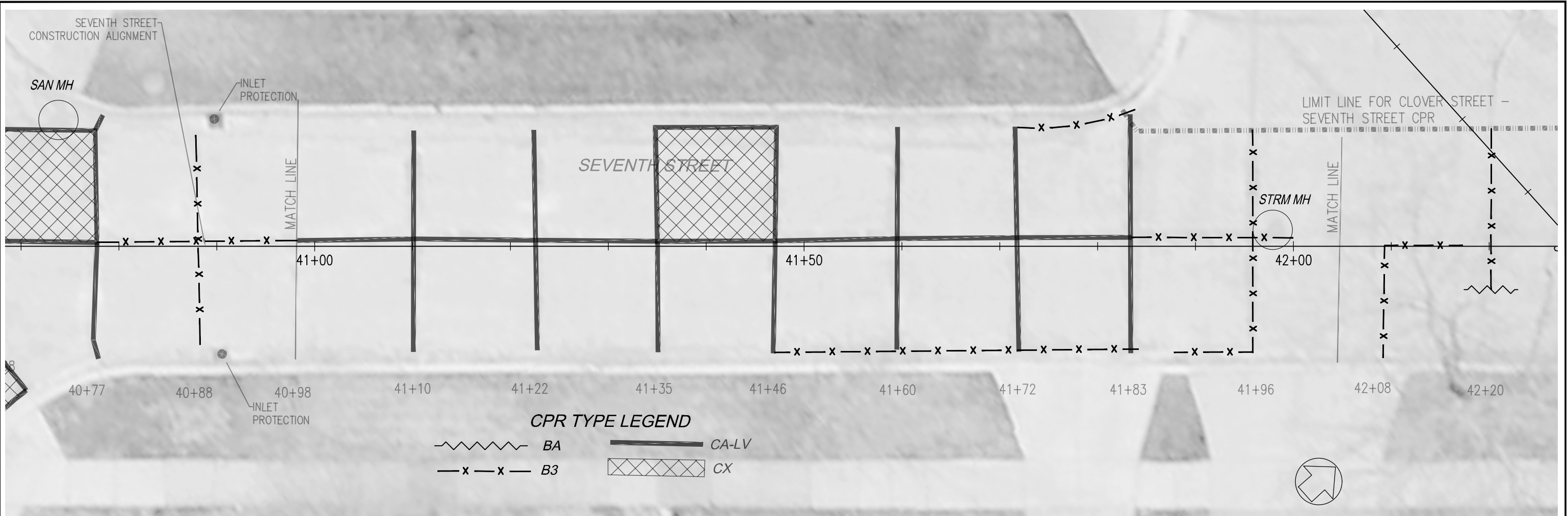
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CPR PLAN

SHEET NO. 12 OF 14

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CPR PLAN

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SHEET NO. 14 OF 14